by the fourth or fifth after severer paroxysms. By the second day after an attack the patients, as a rule, have regained their ordinary degree of health and strength, and have continued well until some fresh exposure has brought on a new attack of their complaint. To this summary I may add, that, so far as my observation extends, all the patients suffering from this disease have had the same pale, sallow, cachectic aspect, two of them having been distinctly jaundiced, and the others having all had at times an icteroid tint of skin.

"It appears to me that this train of identical circumstances, in so considerable a number of cases, places it beyond question that intermittent, or, as I think Dr. Pavy more accurately terms it, paroxysmal hæmaturia, is a definite disease, due in all cases to the same remote constitutional cause. It is quite certain that the only medical treatment which appears to have any effect in diminishing the liability to suffer from the paroxysms on every exposure, is treatment directed, during the intervals, towards the improvement of the general health and the strengthening of the patient's constitution. Once the paroxysms have set in, the most simple means for restoring warmth are all that I have found it advisable to use. The short duration of the paroxysms, the very general absence of blood-corpuscles from the urine, even at the time of the paroxysms, and the complete recovery of the normal character of the urine within a few hours after their subsidence, seem to show that there can be no cause of hemorrhage in the kidneys themselves, but rather that the disintegrated blood transudes through the walls of the bloodvessels in the Malpighian bodies. Indeed, I regard the kidneys rather as the organs of elimination than as the seat of the disease, and I consider the renal irritation, the existence of which is manifested by the pain in the loins and by the presence of casts, and occasionally also of stray blood-corpuscles in the urine, to be a secondary affection consequent upon congestion of the kidneys produced by the sudden and unusual strain thrown upon them. Possibly the paroxysms may consist in the sudden disintegration of an unusually large quantity of blood-corpuscles, setting free so considerable an amount of hæmato-globulin that it cannot undergo the normal changes, but is eliminated through the kidneys in a comparatively unaltered state."

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15. *Catarrhal Icterus.*—Catarrhal icterus, and icterus accompanying poisoning by phosphorus, are produced, according to Virchow, by a catarrh of the intestinal portion of the common bile-duct. The sudden dilatation, and intense colouring, of this duct, together with the obstruction and the coloration of the intestinal portion of the duct, furnish the proofs on which the Berlin Professor relies. But the dilatation of the common bile-duct, and the deep colouring of this duct and of the hepatic-duct, are wanting in many cases. Dr. O. Wyss, who has had the opportunity of observing many cases of poisoning by phosphorus, has not been able to discover the presence of these lesions; and has not even been able to find the mucous plug which, according to Virchow, should be found obstructing the terminal portion of the common bile-duct. The undilated biliary ducts contained a colourless thick mucus; the walls were coloured by bile, and the intestine did not contain any bilious fluid. In order to elucidate this point, M. Wyss examined whether animals having biliary fistulæ became icteric after poisoning by phosphorus. If the icterus were due simply to the obstruction of the intestinal portion of the common bile-duct, it would, in this case, be absent, as the bile would freely escape outwardly. Several dogs, having biliary fistulæ, were poisoned by an injection of phosphorized oil into the rectum. By this method, the vomiting which follows phosphorized injections into the stomach was avoided. The results were as follows. The dogs all had icterus; the urine contained biliary acids. During the icterus the bile did not flow continuously as before the poisoning; sometimes it was mixed with a considerable quantity of mucous matter; sometimes the flow was completely stopped. A thick colourless mucus, which could be removed by forceps, accumulated in the fistulous passage; after its removal, some drops of bile flowed. The conclusions to be drawn from these experiments are the following: 1. The icterus observed in phosphorus-poisoning is a true catarrhal icterus; for observers have remarked a catarrhal affection of the biliary ducts, accompanied by a copious secretion of mucous matters. 2. Catarrhal icterus is not attributable to a catarrh of the

intestinal portion of the common bile-duct, but to accumulation of a thick mucus in the small canals, which are thus obstructed, so that biliary stasis arises. 3. Bile is not present in the hepatic duct and common bile-duct, when the channels leading to these have become impermeable to this fluid. When all these small canals are not choked, the bile may flow in greater or less quantity. The author, while admitting the possibility of the obstruction of the intestinal portion of the common bile-duct, does not think that it ought to be held as the cause of catarrhal icterus.—*Brit. Med. Journ.*, March 14, 1868, from *Archiv der Heilkunde*, 1867.

16. *Production of Artificial Tuberculous Disease by Subcutaneous Irritation, and also by Inoculation with Tuberculous Matter.*—Dr. SANDERSON exhibited to the Pathological Society [London], a series of Microscopical specimens illustrative of the disease produced in guinea pigs by certain modes of subcutaneous irritation, and particularly by the insertion of tuberculous matter in extremely small quantities under the skin. In co-operation with the President he had made very numerous experiments on the subject. As regards the subcutaneous inoculation of tuberculous matter, the results of previous experiments had been in the main confirmed, and it had been found that the anatomical changes so produced were remarkably constant in their character and development. As regards other modes of subcutaneous irritation, whether consisting in the insertion of morbid products under the skin other than tubercle, or in irritating the subcutaneous areolar tissue mechanically, it had been found that, provided the local irritation was of sufficient duration, and yet not of such intensity as to produce speedy death, morbid changes occurred in the internal organs which were of the same nature as those which result from the inoculation of tubercle. The appearances may be best described in the order of their development. The subcutaneous lesions consist in induration and suppuration of the subcutaneous connective tissue at the point of insertion, and in the formation of secondary abscesses or indurated nodules, often in great numbers, in the neighbourhood, these being often connected with the primary one by cords of induration. The indurated parts consist of transparent fibrillated stroma, studded with staff-shaped nuclei. In microscopical sections of the walls of these abscesses all forms of nuclei could be observed, those nearest the cavity being round, those found in the surrounding induration being staff-shaped, while those between were spindle-shaped. In the indurated parts nests of round nuclei occurred; they often surrounded minute arteries. The morbid appearances in lymphatic glands consist in enlargement, induration, and caseous degeneration. These changes are in most cases limited to those glands which receive tributaries from the seat of insertion or irritation. The caseation may result either in softening or in the formation of cretaceous concretions. In some cases the same processes are observed in other subcutaneous lymph-glands. In the lungs disease is to be found in about 9 per cent. of infected animals. The characteristic lesion consists in the formation of nodules of gray induration. The nodules occur both under the pleura and in the depth of the organ. They have the semi-transparent appearance of miliary tubercles. Frequently the largest do not exceed a pin's head in size. Their colour varies from pale gray to iron gray. In the larger ones the gray semi-transparency is confined to the outer part, the centre being yellow and opaque. In microscopical sections of minute nodules, it is seen that each consists of a kernel, outside of which is a more transparent rind. The kernel, which may be enucleated with the point of a needle under the microscope, is more opaque and usually denser than the rest. The cortex consists of lung tissue, in which, in the first place, new growth has taken place in the walls of the alveoli, so as to convert them from transparent structureless membranous partitions into cellular or vesicular septa; while, secondly, epithelial cells dotted with pigment granules have accumulated in the alveolar cavities. The kernel contains in general no epithelial elements. It is a mass of spherical nuclei, remarkably uniform in size, which occupy the loculi of a transparent non-fibrillated stroma—*i. e.*, a solid transparent substance modelled into holes, in which the nuclei lie. This structure has a remarkable resemblance to that of the pulp of the lymphatic glands. In the liver the